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CONTENTS

+ DE LONG, A NEW GENUS—HEBENARUS—AND THIRTEEN NEW SPECIES OF LEAFHOPPERS RELATED TO CLOANTHANUS.....	41
LINSLEY, LARVAL LONGEVITY IN BUPRESTIS AURULENTA LINN.....	53
+ WOLCOTT, THE AMERICAN SPECIES OF TRICHODES.....	54
+ POTTS AND SMITH, HIBERNATION OF DASYMUTILLA AUREOLA.....	60
+ RAY, NOTES AND DESCRIPTIONS OF MORDELLIDAE FROM THE SOLOMON ISLANDS	61
+ LINSLEY, PREY OF THE ROBBER FLY CALLINICUS CALCANEUS.....	67
+ BOHART, STENODYNERUS FUNDATUS AND RELATED SPECIES IN NORTH AMERICA	69
+ ROTGER, A NEW SPECIES OF CICINDELA AND TWO NEW RECORDS OF COLEOPTERA	76
+ USINGER, HOST PLANT RECORDS OF WESTERN LYGUS.....	78
CHAMBERLAIN, SOME RECORDS OF MYRIOPODS COLLECTED BY W. M. PEARCE IN CALIFORNIA.....	79
+ SMITH, A NOTE ON THE HIBERNATION OF MISCHOCYTTARUS FLAVITARSUS IN A NEST OF DOLICHOVESPULA ARENARIA.....	80

San Francisco, California

1944

THE PAN-PACIFIC ENTOMOLOGIST

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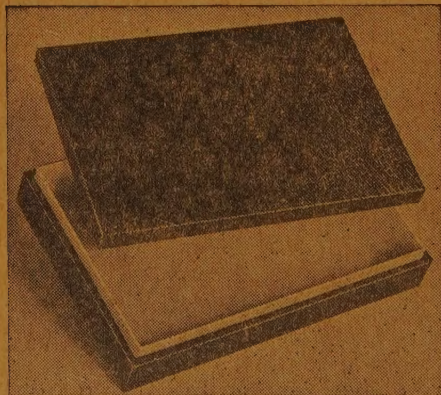
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A NEW GENUS — HEBENARUS — AND THIRTEEN NEW SPECIES OF LEAFHOPPERS CLOSELY RELATED TO CLOANTHANUS (Homoptera, Cicadellidae)

BY DWIGHT M. DELONG

Department of Zoology and Entomology, Ohio State University

In working over the species of leafhoppers collected in Mexico, which belong to the *Platymetopius* groups, some 50 species have been placed in the genus *Cloanthanus*, one in *Scaphytopius*, while others did not seem to belong to any of the described genera. A series of rather closely related species have, therefore, been separated out and a new genus *Hebenarus* is being erected to include these thirteen species. *Scaphytopius ritanus* Ball is being placed in this genus and new species are described in the present treatment. Unless otherwise indicated all the holotype, allotype and paratype specimens are located in the author's collection.

Hebenarus DeLong, new genus

Related to *Cloanthanus* Ball but differing from it by a flat vertex which is usually bluntly angled and as a rule is about as wide or slightly wider than long. The sides of vertex are usually rather convexly rounded to the blunt apex. The vertex is also characteristically marked by a pale margin bordered above and below by a black line. This marking on the vertex margin is more like *Scaphoideus*. The face is not angled above as in *Cloanthanus* and is usually banded just beneath the apex. The venation is similar to that of *Cloanthanus* with numerous short costal veinlets. The species of this group are not marked with peppered or stippled pigment spots as is so frequently found in the color patterns of species of *Cloanthanus*.

The types of genitalic structures of both male and female, although differing among the species of this genus, are distinct from those types found in the species of *Cloanthanus*.

Genotype *Hebenarus pallidus* DeLong.

Hebenarus pallidus DeLong, new species

Resembling *ritanus* in general appearance but with shorter head, pale vertex and scutellum and with distinct male genitalia. Length 4.5-5 mm.

Vertex short, bluntly angled, distinctly wider between eyes than median length.

Color: Vertex and scutellum white tinged with yellow, margin of vertex pale bordered above and below with a brown line. Face with a narrow white band just beneath the lower black line, below this is a darker band between the eyes, and the remainder of the face is white. Pronotum white tinged with yellow, the disc appearing brown. Elytra subhyaline with dark brown veins.

Genitalia: Female last ventral segment with posterior margin almost truncate, punctured either side of a broad, shallow, U-shaped notch on median third. A broad black stripe extends from this portion of margin to base of segment. Male plates short, triangular. Style with a long finger-like process arising on inner margin and extending outwardly. Aedeagus composed of an L-shaped dorsal portion the base of which is bifid and about as long as the stem. This is attached to the base of the ventral portion which is composed of a pair of proximal pieces which in ventral view are tapered from the base to slender pointed tips. In lateral view each piece has a prominent spine on the dorsal side formed at the base of the arrowhead tip.

Holotype male and *allotype* female from MEXICO CITY, D. F., MEXICO, elevation 7,500 feet, collected September 1, 1939, by the author. Paratype male collected at same locality September 13, 1939, by the author. Paratype females collected at CARAPAN, MICH., MEXICO, elevation 6,000 feet, October 2, 1941, and at ZITACUARA, MICH., MEXICO, elevation 6,700 feet, September 29, 1941, by C. C. Plummer, E. E. Good, J. S. Caldwell and the author. A male and female paratype which were collected by Ball and Stone at Km. 66 on the Mexico City-Cuernavaca Road, August 17, 1936, are in the Ball collection in the U. S. National Museum.

HEBENARUS RITANUS (BALL)

Scaphytopius ritanus Ball Can. Ent. 63:221, 1931.

An orange yellow species with white areolar spots on the elytra. Length 4.5-5 mm.

Vertex bluntly angled, a little longer on middle than basal width between the eyes in female, about one-fourth longer than basal width in the male.

Color: Yellow tinged with orange, margin of vertex paler, bordered above and below with a slender brown line. Face dull orange brown a conspicuous pale arc just below margin. Elytra tinged with orange on basal portion with numerous pale spots and areas, posterior portion almost pale hyaline, veins orange.

Genitalia: Female last ventral segment broadly, slightly produced. Male plates short, triangular, apices blunt. Style with a long finger-like apical process arising on inner margin which curves outwardly. Aedeagus composed of a dorsal and a ventral portion. The dorsal portion in lateral view is L-shaped with the base of the "L" extending vertically in the basal portion of segment. This is attached to the ventral portion by a narrow basal strip. Ventral portion composed of a single piece. When viewed laterally it is broad at base and tapers to a slender apex which bears a pair of long spine-like processes extending laterally.

This species was originally described from specimens collected at Tucson, Santa Rita Mountains and Pima County, Arizona. A pair of specimens were collected in the Santa Rita Mountains and compared with the types by Dr. Oman and through his kindness have been available for study and dissection. This species has not been collected in Mexico, but undoubtedly occurs in some of the northern mountain ranges of that country.

Hebenarus ritanus var. *rubralineus* DeLong, new variety

Resembling *ritanus* in form and general appearance but marked with longitudinal red stripes on vertex, pronotum and scutellum. Length, female 5 mm.

Vertex produced and rather sharply angled, a little longer at middle than basal width between the eyes.

Color: Vertex, pronotum and scutellum pale brown. A pair of broad red stripes arise at margin of vertex and extend across vertex, pronotum and terminate in basal angles of scutellum. These form a narrow brownish margin next either eye and a broad median stripe which is narrow at apex and at base, and is broader on median half. Pronotum with a pair of longitudinal red stripes behind each eye. Margin of vertex reddish with a black line just above and just below. Face brown with a broad white band just beneath the black line and indications of several pale arcs. Elytra pale brown, with dark brown markings on disc, apex smoky and apical costal veinlets dark.

Genitalia: Female last ventral segment sloping from base to posterior margin which is slightly trilobate.

Holotype female collected at ORIZABA, V. C., MEXICO, October 17, 1941, by E. E. Good, J. S. Caldwell, C. C. Plummer and the author.

Hebenarus abruptus DeLong, new species

Resembling *ritanus* in general form and appearance but with a shorter vertex and a darker coloration. Male genitalia distinct. Length, male 4.5 mm.

Vertex bluntly angled, length at middle equaling the basal width.

Color dull yellow, tinted with brown. Vertex dirty yellow with a broad, pale brown stripe either side of middle, a slender black line just above pale margin and a black line dividing and another just below the pale marginal band on face. Main portion of face dark brown, the genae paler. Pronotum and scutellum brown. Elytra subhyaline, tinged with brown, veins dark brown.

Genitalia: Female last ventral segment broadly roundedly produced with a slight notch at middle. The central third of segment black from margin to base. Male valve large, triangular. Plates short, triangular with bluntly pointed apices exceeding valve by about one-half its length. Aedeagus with a large ventral and a small dorsal portion. The ventral process is long with the apical third bent at right angles and extending ventrally. This bent portion is enlarged at middle. The dorsal portion which consists of a rather small curved ring enlarged on the ventral side is connected to the ventral portion by a rather long and broad process.

Holotype male collected near CUERNAVACA, MOR., MEXICO, elevation 7,000 feet, from shrubs, October 21, 1941, by E. E. Good and the author. *Allotype* female and paratype females collected at CARAPAN, MICH., MEXICO, elevation 6,000 feet from Oak, October 2, 1941. Paratype male from URUPAN, MICH., MEXICO, elevation 5,300 feet, October 1, 1941, and paratype female collected at ZACAPU, MICH., MEXICO, elevation 6,500 feet, October 4, 1941. All the paratypes and the allotype were collected by C. C. Plummer, E. E. Good, J. S. Caldwell and the author.

Hebenarus altus DeLong, new species

A blunt headed species resembling *abruptus* but with shorter vertex and paler coloration. Length, female 4.5 mm.

Vertex short, bluntly angled, slightly shorter at middle than basal width between the eyes.

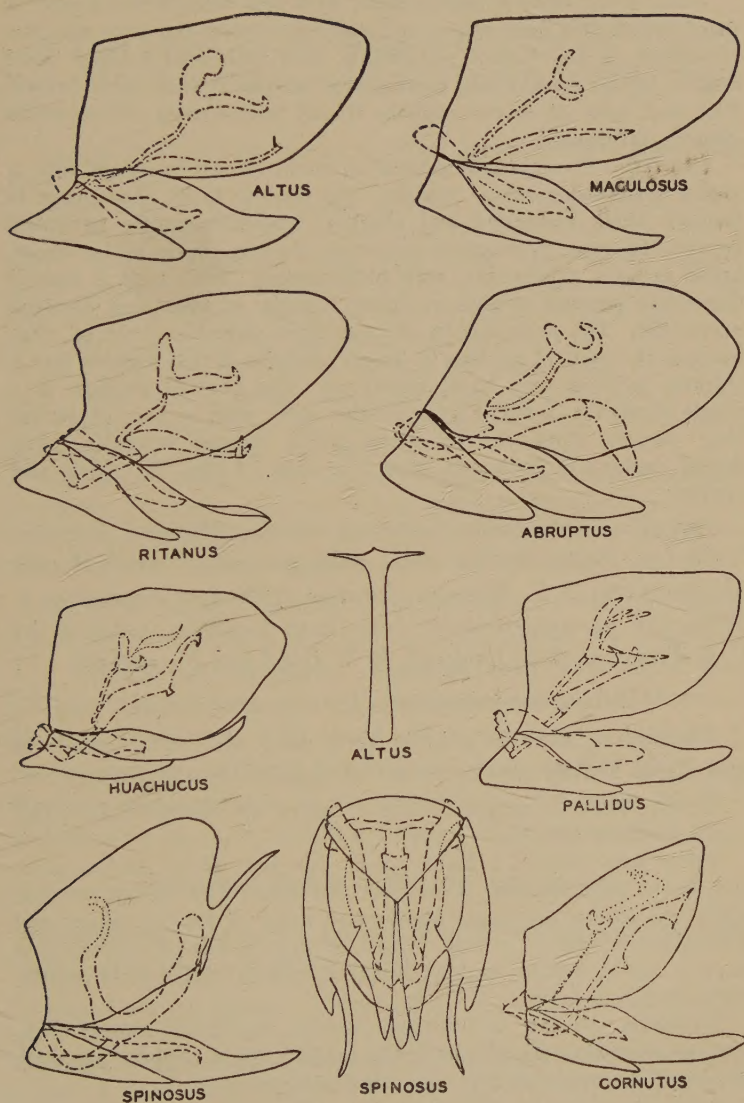


PLATE I

Lateral views of male genital structures as labeled, ventral view of aedeagus of *altus* (center), ventral view of male genital structure of *spinosus* (bottom center).

Color dirty white to pale yellow, with few definite markings. A faint brown line just above and one just below the pale margin. Pronotum darker brown. Scutellum pale with rust colored basal angles. Elytra subhyaline, veins except on claval area, dark brown. Disc and apex of clavus slightly tinged with brown. Face white slightly infuscated.

Genitalia: Female last ventral segment almost truncate with a slight U-shaped notch at middle. The central third of segment is broadly black margined and slightly, almost abruptly produced beyond the outer portions of posterior margin. Male plates short, broad at base, triangular, with blunt apices. Style with a curved finger-like process arising on inner margin at apex and directed outwardly. The aedeagus in general type resembles that of *ritanus* but the ventral portion is longer and the dorsal portion has a thicker, more curved basal structure. The ventral portion is a single structure, tapered to a slender apex with a pair of rather long slender spine-like processes which extend laterally. The dorsal portion is L-shaped with the base of the "L" thick and curved.

Holotype male from SALTILLO, COAH., MEXICO, elevation 7,500 feet, September 23, 1941. *Allotype* female collected near MEXICO CITY, D. F., MEXICO, elevation 8,000 feet, September 1, 1939, and paratype females from both localities collected by C. C. Plummer, J. S. Caldwell, E. E. Good and the author.

Hebenarus rubranotus DeLong, new species

Resembling *altus* in general form with pronotum, scutellum and clavus heavily irrorate with red. Length, female 5 mm.

Vertex bluntly angled, slightly longer at middle than basal width between eyes.

Color pale yellow, a faint pencil line just above and another just below pale margin. Pronotum, scutellum and clavus stippled with red, except the basal angles and apex of the scutellum and the apical fourth of clavus. Veins of elytra, except clavus, pale brown, and a brown spot at apex of clavus. Face pale yellow, unmarked.

Genitalia: Female last ventral segment appearing almost truncate on posterior margin with the median third slightly abruptly produced, truncate at apex and black margined.

Holotype female and paratype female collected from Oak on the mountains at 6,500 feet elevation just west of SALTILLO, COAH., MEXICO, September 23, 1941, by the author.

When the males of this brilliantly colored species are obtained and examined it may prove to be only a color variety of *altus*.

Hebenarus curtus DeLong, new species

A blunt headed species resembling *altus* but with a shorter head, different coloration, and distinct female genitalia. Length 4.5 mm.

Vertex short, almost one-third wider between eyes at base than median length.

Color: Vertex dull yellowish with a white longitudinal stripe either side of median line which does not extend to apex and a short white longitudinal stripe next either eye. Vertex margin white bordered above and below with a brown line. Another white band on face touches marginal band at middle but is narrower and more distant from marginal band at the ends. Face dark brown. Pronotum dark brown with a few paler spots. Scutellum dull orange with a darker oblique broad stripe either side of middle. Elytra pale subhyaline with dark brown veins. The portion covering body appears very dark.

Genitalia: Female last ventral segment concavely roundedly produced from near base to form a produced rounded lobe either side of a deep median, narrow V-shaped incision, reaching more than halfway to the base. Each lobe is black colored.

Holotype female collected at ZACAPU, MICH., MEXICO, elevation 6,500 feet, October 4, 1941, by E. E. Good, C. C. Plummer, J. S. Caldwell and the author. Paratype female collected at Km. 57, elevation 8,500 feet, on the Cuernavaca Road in MORELIA, MEXICO, October 21, 1941, by E. E. Good and the author. A female paratype collected by Ball and Stone at Km. 66 on the Mexico City-Cuernavaca Road, August 17, 1936, is in the Ball collection in the U. S. National Museum, Washington, D. C.

Hebenarus cornutus DeLong, new species

Resembling *curtus* in form and general appearance but with distinct genitalia. Length 4-4.5 mm.

Vertex bluntly angled. About as long as width between eyes at base.

Color: Vertex brown, margin white with a narrow black line above. A white elongate spot just back of apex which is replaced on the basal three-fourths by a pair of white parallel lines extending to pronotum, one either side of middle. Pronotum brown, mottled with pale. Scutellum reddish brown, a white spot about the middle on either side. Elytra hyaline with brown veins, a brown spot on middle and a smaller one on apex of clavus. Face reddish brown a complete pale arc a little below marginal band and indications of three other pairs below.

Genitalia: Female last ventral segment with short lateral margins from which the posterior margin is gradually produced to form a broadly rounded lobe either side of a short narrow V-shaped median notch. Male plates rather short, thick and blunt, almost rounded at apex. A conspicuous lateral rounded lobe on outer margin of each plate at base. Aedeagus composed of a pair of rather long proximal pieces which are slender at base and are widened on apical half to form a broad funnel-like tip. A small rather square-shaped tooth is present on the ventral side of each process at about its middle. There is also a small curved dorsal portion which is just above the paired ventral processes.

Holotype male and *allotype* female from SAN CRISTOBAL, GUATEMALA, 7,200 feet elevation, March 30, 1942. Paratype male and female from PANAJACHAL, GUATEMALA, elevation 5,000 feet, March 5, 1942, all collected by Dr. C. C. Plummer.

Hebenarus marginellus DeLong, new species

Resembling *ritanus* in general form but with different coloration. Length, female 5 mm.

Vertex produced and bluntly angled, length at middle equalling basal width between the eyes.

Color: Dull orange to brown. Vertex with a pale longitudinal stripe either side of median line. Pronotum and scutellum with faint, longitudinal, paler stripes. Elytra brownish subhyaline with darker brown veins. Margin of vertex with a double white band separated by a narrow brown line and margined above and below by a brown line. Face pale brown.

Genitalia: Female last ventral segment produced on lateral margins from near base, posterior margin truncate or slightly concave.

Holotype female from ORIZABA, VERA CRUZ, MEXICO, 3,500 feet elevation, collected October 17, 1941, and paratype females from CARAPAN, MICH., MEXICO, elevation 6,000 feet, October 2, 1941, and ZITACURA, MICH., MEXICO, elevation 6,700 feet, September 29, 1941. All collected from oak by E. E. Good, J. S. Caldwell, C. C. Plummer and the author.

Hebenarus arcuatus DeLong, new species

Closely related to *marginellus* but with a shorter vertex and different coloration. Length, female 5.5 mm.

Vertex slightly longer at middle than basal width between the eyes.

Color: Vertex pale brown, margin paler. An elongated pale spot at apex and two oblique pale stripes either side extending from margin to base, one next each eye and one either side and not far from median line. Pronotum dark brown, paler along anterior margin. Scutellum pale brown, basal angles orange. Elytra subhyaline, veins, nervures and ramose pigment lines on disc and clavus, brown. Face pale washed with light brown, a narrow brown transverse line just beneath pale margin and a pale "sharks mouth" mark between eyes not far below margin.

Genitalia: Female last ventral segment with posterior margin almost truncate, broadly, slightly emarginate. The color markings cause it to appear deeply squarely notched because of a dark arc shaped spot between the ends of which and the posterior margin the segment is brown.

Holotype female collected at JALAPA, GUATEMALA, elevation 4,854 feet, March 24, 1942, by Dr. C. C. Plummer.

Hebenarus huachucus DeLong, new species

Resembling *ritanus* in general form but with a shorter vertex and distinct male genitalia. Length 5 mm.

Vertex rather broad and bluntly angled, length at middle equaling width between the eyes.

Color yellow, marked with brown. Vertex yellowish, with a wedge-shaped white mark at apex and a pair of white median longitudinal stripes which are slightly separated extending from apex of wedge-shaped spot to the base. Margin white with a narrow dark line just above and another just below. Face with a brown band just below marginal white band and another narrow white band just beneath the brown. Between this and the clypeus the face is pale brown distinctly tinted with red. In color it is strikingly contrasted with the yellowish clypeus, lorae and genae. Pronotum pale brown. Scutellum orange. Elytra white with dark brown veins and numerous pigment marks which appear as cross veins.

Genitalia: Female last ventral segment with posterior margin gently sloping from either side to form a pair of rounded lobes between which is a median broad V-shaped notch which extends more than halfway to base of segment and is brown bordered. Male plates short, triangular, apices bluntly angled. Style with a short, tapered, sharply pointed finger-like apical process which is directed outwardly. Aedeagus consisting of a ventral portion which is bifid at about its middle, so that the apical half is composed of a pair of proximal structures. In lateral view the basal half is broad with a curved ventral bulge at middle bearing a short square tooth. The apical half is tapered from middle to form a ventrally

curved broadened tip. The dorsal process is short with a bifid basal portion and a short apically curved and pointed ventral or apical portion.

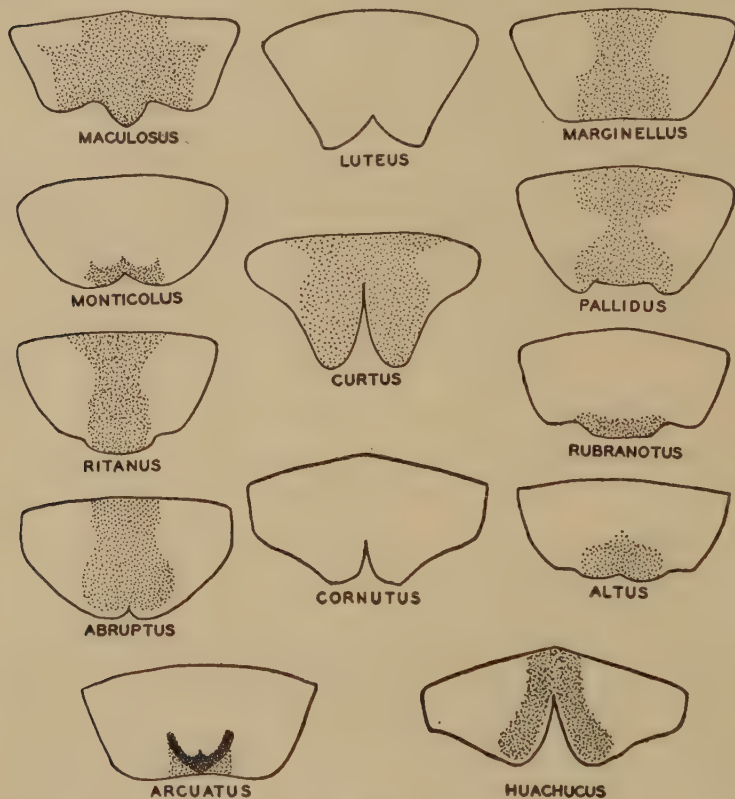


PLATE II

Ventral views of last ventral segments of females as labeled.

Holotype male, *allotype* female and male and female *para*-types collected in the HUACHUCA MOUNTAINS, ARIZONA, July 20, 1936, and June 9, 1935, by Prof. J. N. Knull.

Hebenarus monticolus DeLong, new species

In general form resembling *ritanus* but with brown banded elytra. Length, female 5 mm.

Vertex produced and bluntly angled, longer at middle than basal width between eyes.

Color: Vertex bright yellow with white longitudinal markings, in the form of an elongated spot at apex and a longitudinal stripe each side of middle not extending to the white margin which is bordered above and below by a black line. Pronotum brown with five pale longitudinal stripes. Scutellum yellow, Elytra white, spotted with yellow and with two prominent brown bands. One crosses the middle of clavus and one crosses apex of clavus. Apex of elytra brown bordered, veins brown. Face brown with pale arcs above.

Genitalia: Female last ventral segment sloping from base to posterior margin which is broadly rounded either side of a broad shallow, median notch.

Holotype female collected at TAXCO, GUERRERO, MEXICO, September 9, 1939, by C. C. Plummer and the author. This was swept from a thick growth of shrubs on the mountainside at an elevation of 6,000 feet.

Hebenarus maculosus DeLong, new species

Resembling *ritanus* in general form but with different coloration and male genitalia distinct. Length 4.5-5.5 mm.

Vertex bluntly angled, length about equaling width.

Color: Vertex pale with longitudinal pale orange markings. A prominent black line above and another below the white margin. Face with a white band just below the lower black line. Upper portion of face pale brown, lower portion lighter. Pronotum brownish with paler longitudinal stripes. Scutellum with basal angles pale brownish, median portion paler. Elytra whitish subhyaline, veins brown, a brownish spot at apex of clavus and apical portion of elytra infuscated.

Genitalia: Female last ventral segment with posterior margin concavely rounded either side of a median roundedly produced lobe which extends beyond the lateral angles, male plates of medium length and triangular. Style rather long and with a prominent apical finger-like process on inner margin which is directed caudally and outwardly. Aedeagus composed of a pair of long slender ventral processes which are pointed at apex and bear a prominent pointed tooth on inner margin just before apex. These are connected by a long slender process from the base to a small dorsal portion composed of a single ventro-apical process and a bifid dorsal process.

Holotype male collected at CARAPAN, MICH., MEXICO, elevation 6,000 feet, October 2, 1941, from Oak. *Allotype* female taken at PUEBLA, PUEBLA, MEXICO, elevation 8,500 feet, October 18, 1941, both collected by J. S. Caldwell, E. E. Good, C. C.

Plummer and the author. Paratype female collected from shrubs by Dr. Dampf at BELLA VISTA, D. F., MEXICO, 8,000 feet elevation, September 17, 1933 (M. B. 366).

Hebenarus luteus DeLong, new species

Resembling *ritanus* in general form. A sharp headed species with different coloration and different female genitalia. Length, female 5 mm.

Vertex produced, apex bluntly angled, distinctly longer on middle than basal width between the eyes.

Color: Vertex orange yellow with a paler longitudinal stripe either side of median line. Margin white, bordered above and below by a black line. Face dark brown with a broad white arc just below margin and traces of four pairs of arcs on upper portion. Pronotum dark brown, scutellum pale brown. Elytra pale subhyaline, washed with pale brown, veins dark brown. The body gives a dark brown appearance to the elytra as seen from above.

Genitalia: Female last ventral segment strongly sloping to posterior margin which is convexly rounded from either side to form a broad, conspicuous V-shaped notch which extends about one-fifth the distance to the base.

Holotype female and paratype female collected at ORIZABA, VERA CRUZ, MEXICO, Km. 280, elevation 7,700 feet, October 17, 1941, by C. C. Plummer, E. E. Good, J. S. Caldwell and the author. These were collected from a growth of shrubs on one of the higher mountains several miles west of the city of Orizaba.

Tenuarus DeLong, new subgenus

This subgenus is distinguished from the other species placed in this genus by a thin edged vertex margin which is slightly turned up and the sides of vertex distinctly convexly rounded. The costal margin has very few costal veinlets and the male genitalia are entirely different in general form. The pygofer bears a pair of long spines on the ventro-caudal margin and the styles are long and very slender.

Genotype *Hebenarus (Tenuarus) spinosa* DeLong.

Hebenarus (Tenuarus) spinosus DeLong, new species

Resembling *ritanus* in general form but with vertex, pronotum and scutellum longitudinally striped and with distinct male genitalia. Length, male 5 mm.

Vertex rather strongly produced but bluntly angled, longer at middle than basal width between the eyes, sides convexly rounded.

Color: Orange yellow, vertex with a pale median longitudinal spot at apex, a broad white longitudinal stripe either side of middle and a pale longitudinal spot along the anterior portion of each eye. Margin pale bordered above and below by a conspicuous brown line. Pronotum with seven longitudinal stripes. Scutellum orange yellow with a paler median longitudinal stripe terminating in the apical angle which is also paler. A white longitudinal stripe on inner margin of either basal angle. Elytra pale brown with dark brown veins, and with round, white, brown bordered spots in anteapical and apical cells just before and just posterior to the cross veins. Face rather uniform pale brown except a conspicuous angled white stripe just beneath margin which is bordered beneath by a dark brown line.

Genitalia: Male plates long, rather broad at base, convexly rounded on basal two-thirds then tapered to pointed apices. Style long and narrow with pointed apex which is slightly curved inwardly. Aedeagus consisting of a single portion which curves dorsally at base and is more slender. In ventral view the aedeagus is enlarged at apex forming two rounded lobes. Each pygofer bears a long slender spine on inner ventral portion which extends decidedly beyond the pygofer.

Holotype male collected at VERGEL, CHIAPAS, MEXICO, valley of the Rio Huixtlá, elevation 3,000 feet, June 6, 1935, by Dr. A. Dampf (M. F. No. 4458).

LARVAL LONGEVITY IN BUPRESTIS AURULENTA LINN

The writer has recently reviewed¹ available information on larval longevity and delayed emergence of *Buprestis aurulenta* Linn. from structural timbers. Subsequently an interesting record from Guam was noted in an article by Swezey². Swezey states,

"One specimen of this American species was obtained in our residence at Piti, July 9, [1936]. It had apparently issued from a porch floor board as there was an exit hole which appeared fairly fresh. Two other similar holes had an older appearance. The boards were of Douglas fir which had been shipped from the Puget Sound Region. The house was constructed prior to 1915."

Although Swezey expresses the doubt that the larva could have existed for that length of time before maturing, I think there is now little question but that this was actually the case.—
E. GORTON LINSLEY.

¹ Linsley, E. G. 1943. Delayed emergence of *Buprestis aurulenta* from structural timbers. Jour. Econ. Ent., 36:348-349.

² Swezey, O. H. 1942. Miscellaneous families of Guam Coleoptera. B. P. Bishop Mus., Bull. 172:150-171.

THE AMERICAN SPECIES OF TRICHODES

(Coleoptera, Cleridae)

BY A. B. WOLCOTT

Downer's Grove, Illinois

A third of a century has elapsed since the writer prepared his synopsis of the *Trichodes*¹. At that time ten species were known from our fauna, later two other species were described, the first of these being *bicinctus* Green, the other *basalis* Van Dyke, thus bringing the number of known species to an even dozen. As it is likely that few, if any, remain to be discovered the present time appears to be opportune for the presentation of an amended and augmented table of species.

It is very probable that eventually the name *Trichodes* Herbst, will have to be dropped in favor of *Clerus* Fab. John Curtis² in 1824 designated *Attelabus apiarius* Linn., as the genotype of *Clerus*, in which move he was followed by a number of other writers. In 1840 F. W. Hope³ also designated *T. apiarius* Linn., as type of *Clerus* Latr., and synonymized it with *Trichodes* Fab. Dr. E. A. Chapin (*in litt*) who has thoroughly investigated the status of these two generic names finds that they are isotypical and that *Clerus* Fab. (1775) has priority over *Trichodes* Herbst (1792). Thus in conformity with the rules of nomenclatural procedure it will be necessary to substitute *Clerus* Fab. for the name *Trichodes* of Herbst.

The present writer retains the name *Trichodes* merely as a matter of convenience.

KEY TO THE AMERICAN SPECIES OF TRICHODES

1. Form slender; elytra at base two-fifths as wide as long.....2
Form moderately robust; elytra at base subequal to one-half their length 10
2. Antennal clava broadly triangular, about one-half longer than broad 3
Antennal clava elongate-triangular, twice as long as broad.15
3. Elytral apex truncate (rounded in *bicinctus* and *bibalteatus*..4
Elytral apex rounded.....10
4. Abdomen blue black, in part red.....*oresterus* Wolcott
Abdomen and legs yellowish-brown.....5

¹ Wolcott, A. B., 1910, Notes on some Cleridae of Middle and North America, Field Mus. Nat. Hist., Zool. Ser., 7 (10) :339-401, Pls. 5-6.

² Curtis, John, 1824, The Genera of Insects, British Ent., 1:44.

³ Hope, F. W., 1840, The Coleopterist's Manual, 3:137.

5. Pronotum metallic green, coarsely, not cribrately punctate, disk shining.....*basalis* Van Dyke
Pronotum black with greenish lustre.....6
6. Elytra fulvous or reddish, fasciae black.....*bicinctus* Green
Elytra ferrugineous 7
7. Legs usually wholly or in part ferrugineous; funicle of antennae rufous, clava darker; flanks of elytra and yellow fasciae broadly bordered with dull black.....*horni* Wolcott and Chapin
Legs and antenna black.....8
8. Elytra dull black, abdomen shining olive green.....*peninsularis* Horn
Elytra yellow or orange red.....9
9. Two elytral fasciae and apex blue, truncate.....*simulator* Horn
Two elytral fasciae black, apex rounded, immaculate; abdomen dark blue, apical segment always red.....*bibalteatus* LeConte
10. Elytra feebly shining black, with faint cupreous lustre; abdomen dark green, in part red.....*nexus* Wolcott
Elytra shining blue, green, yellow or red.....11
11. Prothorax with sides compressed at apex, strongly compressed at base 12
Prothorax subquadrate, sides feebly compressed at apex and base 13
12. Pronotum blue or green, moderately sparsely, rather coarsely punctate, clothed with rather long dense yellow pubescence.....*ornatus* Say
Pronotum dark aeneous, moderately densely, rather coarsely and shallowly punctate, clothed with rather long, dark fulvous or tawny pubescence 14
13. Robust; elytral fasciae scarcely discernible, only evident by reason of the more sparse but coarse, confluent punctuation of the areas normally occupied by the yellow fasciae of the elytra.....*ornatus* var. *obsoletus* Wolcott
Slender, small, otherwise as in typical form.....*ornatus* var. *tenellus* LeConte
14. Elytra dark blue with a more or less rounded red or yellow maculation at middle, contiguous to lateral margins.....*bimaculatus* LeConte
Elytra blue, trifasciate with yellow or red.....15
15. Pronotum blue, rather finely, moderately densely punctate, clothed with rather long dense grayish pubescence.....*nutalli* Kirby
Pronotum dark brown, clothed with rather long dense brownish pubescence. Elytra red or yellow, two fasciae and apices blue or purple black.....*apivorus* Germar
Anterior fascia reduced to a large irregularly rounded maculation on each elytron, postmedian fascia broadly interrupted at the suture....var. *borealis* Wolcott and Chapin

NOTES ON SOME SPECIES OF TRICHODES

TRICHODES BASALIS VAN DYKE

Trichodes basalis Van Dyke, 1943, Pan-Pac. Ent., 19:41.

Dr. E. G. Linsley has very kindly supplied the writer with an excellent sketch of the elytral markings of the type specimen of this species, a copy of which is presented (Fig. 1). Dr. Linsley also sent some helpful and valuable notes pertaining to this species, which are quoted in their entirety "In form it resembles a slender specimen of *oresterus* Wolcott, the basic elytral pattern is also similar to some examples of *oresterus*. However, the pale areas of the elytra are clear yellow without any reddish or orange tint. The pronotal pubescence is yellow and a little longer (possibly also denser) than in my series of *oresterus*. The punctures of the pronotum and elytra are coarse but less deep than those of *oresterus*. Likewise the legs and entire under surface is brownish-yellow in contrast to the blue color and red abdomen of *oresterus*." (Linsley, *in litt.*)

Type locality: Imperial County, California.

TRICHODES BICINCTUS GREEN

Trichodes bicinctus Green, 1917, Ent. News., 28:367.

Dr. J. W. Green very generously gave the writer one of the two males mentioned in his original description of this species. The specimen is from Green Valley, Brewster County, Texas, July 14, collected by J. W. Green. It agrees with the description in every detail. A figure of the elytral pattern is shown (Fig. 2).

Dr. Linsley also presented the author with a pair of this species, male and female, taken on flowers at Laredo, Texas, June 12, 1932. In both of these specimens the body beneath is green, the abdomen greenish black. The black elytral markings reduced to two transverse maculations on each elytron and the apex with a narrow lunate maculation. This form is represented by the figure given (Fig. 3). The elytral apex is rounded in both sexes.

TRICHODES HORNI WOLCOTT AND CHAPIN

Trichodes horni Wolcott and Chapin, 1918, Bull. Brooklyn Ent. Soc., 13:107.

Trichodes illustris Horn, 1876, Trans. Amer. Ent. Soc., 5:231.

As pointed out by Wolcott and Chapin *illustris* is preoccupied and the name *horni* has been substituted in its stead. Horn in his description states that "the elytra . . . conjointly rounded ♂, truncate and sinuate at tip ♀." The elytra are always more or less truncate in both sexes, never conjointly rounded, the truncature being merely of less extent in the ♂ than in the ♀. A rather small specimen of this species from the Santa Rita Moun-



ELYTRAL PATTERN IN TRICHODES

Fig. 1. *Trichodes basalis* Van Dyke. 2. *T. bicinctus* Green. 3. *T. bicinctus* var.

tains, Arizona, September 29, 1932, has the elytra, with the exception of the yellow fasciae, entirely dull black with a small rounded maculation on each midway between the median and anteapical fasciae, red.

In the text of the writer's descriptive notes³ the fourth line under *T. illustris* Horn, "The more finely punctured head," should read "The more coarsely punctured head."

³ Wolcott, A. B., 1910, l. c., 7(10):369.

TRICHODES SIMULATOR HORN

Trichodes simulator Horn, 1880, Trans. Amer. Ent. Soc., 8:149, 1880.

Trichodes simulator flavescens Cockerell, 1898, New Mex. Agr. Exp. Sta. Bull. 28:155.

Trichodes simulator Wolcott, 1910, Field Mus. Nat. Hist., Zool. Ser., 7(10):170.

Abdomen shining blue, terminal segment deep blue black. Body beneath densely clothed with long semi-recumbent yellowish-white pilosity, the abdomen with short, sparse pile. Legs dark blue with greenish lustre, tarsi obscurely testaceous. Elytral apices in both sexes truncate. The following localities may be added to those already recorded: Bandelier, New Mexico; Cedar City, Utah; Grand Junction and Craig, Colorado.

TRICHODES BIBALTEATUS LECONTE

Trichodes bibalteatus LeConte, 1858, Jour. Acad. Nat. Sci. Phil., (2)4:18; Horn, 1876, Trans. Amer. Ent. Soc., 5:231; Wolcott, 1910, Field Mus. Nat. Hist., Zool. Ser., 7(10):371.

The blue abdomen has the terminal segment always red, often obscurely so in the female, rarely the entire abdomen red, with the exception of the basal and second segment, which are blue. The elytral apices are rounded in both sexes. To the recorded localities may be added: Fedor, Lee County, Texas (Birkmann), and Oklahoma.

TRICHODES ORNATUS SAY

Trichodes ornatus Say, 1825, Jour. Acad. Nat. Sci. Phila., 3:189; Klug, 1842, Abh. Berl. Akad., p. 340; Spinola, 1844, Mon. Clér., 1:327, Pl. 31, fig. 5; LeConte, 1849, Ann. Lyc. Nat. Hist. N. Y., 5:18; Say's Comp. Writ., Léc. ed., 1859, 2:120; Horn, 1876, Trans. Amer. Ent. Soc., 5:231; Horn, 1891, Ent. News, 2:6; Cockerell, 1893, Trans. Amer. Ent. Soc., 20: 329; Wickham, 1893, Can. Ent. 27:249; Wolcott, 1910, Field Mus. Nat. Hist., Zool. Ser., 7(10):172.

Trichodes Hartwegianus White, 1849, Cat. Cler. Brit. Mus., 4:60; Cockerell, 1893, Trans. Amer. Ent. Soc., 20:329.

Trichodes Douglasianus White, 1849, Cat. Cler. Brit. Mus. 4:60; Cockerell, 1893, Trans. Amer. Ent. Soc., 20:329.

A large example of this species from Banff, Alberta, has quite broad elytral markings, but the basal fascia is broadly inter-

rupted at the suture, from the inner end of the remaining portion of this fascia a backward extending broad vitta is united near suture with the median fascia. In a specimen from Parma, Idaho, the basal three-fifths of the elytra red, the posterior margin of this portion truncate, the red portion has the humeral umbones and a very small oblique maculation at the middle blue, the apical two-fifths blue, with the usual oblique yellow fascia of this part. In another specimen from the same locality the elytra are entirely red, with a small postmedian marginal maculation and the apices narrowly blue. In a specimen from Aspen Lake, Klamath County, Oregon, the elytra are entirely blue, with a very small transverse yellow maculation distant from lateral margin, at middle of each elytron.

To the localities in which *T. ornatus* and *T. nutalli* occur in common Pike's Peak, Colorado, may be added.

Trichodes ornatus var. nov. *obsoletus* Wolcott

Form rather robust, Elytra at base nearly one-half as broad as long, sides straight and parallel, scutellar area deeply and broadly depressed, base midway between the scutellar depression and the humeri depressed, thus causing the humeral umbones to appear very prominent, each elytron with a deep, rather broad groove parallel to the suture, extends from the scutellar depression nearly to the elytral apex. Head dark green, rather shining with slight aeneous lustre, coarsely roughly sculptured, antennal clava broad, short. The antennae, palpi, tibiae and tarsi fulvous, clothed with short, rather dense fulvous pile. Pronotum green, with distinct aeneous lustre, coarsely, rather sparsely, irregularly punctate. Elytra cyaneus with cupreous lustre, moderately shining, coarsely, densely punctate, sutural bead very dark blue, elytral markings arranged as in *T. ornatus*, but practically obsolete, faintly badius and this covered by a faintly sordid whitish surface gloss. The head, pronotum and elytra clothed with fulvous pile, quite dense and longest on head, pronotum and base and apex of the elytra. Body beneath and abdomen green with cupreous lustre. Length 10 mm.; breadth (across humeri) 3 mm.

Holotype (δ), SIERRA ANCHA MTS., ARIZONA. (D. K. Duncan) in collection of the author.

This form would appear to be sufficiently distinct to be classed as a valid species, but the pattern of the scarcely discernible elytral markings, which, by the way, are very difficult to describe, show it to be a mere variety of *T. ornatus* Say.

TRICHODES NUTALLI KIRBY

Trichodes nutalli Wolcott, 1910, Field Mus. Nat. Hist., Zool. Ser., 7(10):174.

Under this species the synonym *Trichodes nutalli* of Say should be transferred to the synonymy of *T. apivorus* Germar.

TRICHODES APIVORUS VAR. BOREALIS WOLCOTT AND CHAPIN

This name (which appears in the key) was proposed by the authors to replace the preoccupied name *interruptus* LeConte.

HIBERNATION OF DASYMUTILLA AUREOLA PACIFICA

On January 21, 1944, while collecting under rocks near Patterson Pass, Alameda County, California, elevation 1150 feet, two unworn female *Dasymutilla aureola pacifica* (Cresson) were found in hibernation. Under the same rock was a broken 3-cell nest of *Sceliphron servillei* (Lepeletier) which apparently had not produced adult wasps.

Mickel¹ cites common records of *aureola pacifica* from March through November, while a single December and a single January record are also given for Berkeley. Mickel also notes that a very great size variation is known in the female, indicating the probability of a variety of hosts. In his general summary of the life history of a Mutillid it appears that hibernation is normal for the prepupal stage. Bohart and MacSwain² give the activity record for another species (*D. sackenii* (Cresson) as June to November and state that pupation occurs in spring or early summer, after hibernation in a prepupal stage.

It would appear possible that in this case *Sceliphron* had served as the host and that the life cycle was such as to produce fresh adult females in the late fall or winter months. Such a cycle is at variance with those reported by Mickel and by Bohart and MacSwain, although Mickel lists specimens taken in the winter months. It is possible that these also were hibernating.

Determination of the mutillids was made by Mickel; of the wasp nest by E. Gorton Linsley.—R. W. L. POTTS and R. F. SMITH.

¹ Mickel, C. E., 1928, Biological and Taxonomic Investigations on the Mutillid Wasps, U. S. Nat. Mus. Bull. 143.

² Bohart, G. E., and J. W. MacSwain, 1939, The Life History of the Sand Wasp, *Bembix occidentalis beutenmuelleri* Fox and its Parasites. Bull. So. Calif. Acad. Sci., 38(2):84-98.

X NOTES AND DESCRIPTIONS OF MORDELLIDAE FROM
THE SOLOMON ISLANDS

(Coleoptera)

BY EUGENE RAY

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The following notes and descriptions were made from thirty-three specimens collected in the Solomon Islands by H. T. Padgen and R. A. Lever and sent to the writer by Sir Guy A. K. Marshall, Director of the Imperial Institute of Entomology, British Museum (Natural History). Seven species, including an unidentifiable one, are represented in this material. Of these two are known forms and four are described as new. The types of the new species are temporarily placed in the Field Museum of Natural History, Chicago, Illinois, while paratypes remain in the collection of Eugene Ray.

MORDELLA LOTTINI Boisduval

(Fig. 1)

Mordella lottini, Boisduval, 1835. Voy. Astrolabe 2:291.

One specimen: Tulagi, November 25, 1934 (H. T. Padgen). This species was originally described from the island of New Guinea and has since not been recorded elsewhere.

MORDELLA SALOMONENSIS Pic

(Fig. 2)

Mordella salomonensis Pic, 1929. Mel. Exot.-Ent. 54:22.

Two specimens: British Solomons, February, 1932, and Solomon Islands, 1934 (R. A. Lever). This is the first record subsequent to publication of the original description.

Mordella subaenea Ray, new species

(Figs. 3, 5, 6, 9)

Form slender, with the facies of a *Mordellistena*, sides distinctly curved throughout. Derm black, except for labrum, proximal segments of antennae, maxillary palpi, anterior femora and spurs of posterior tibiae, which are castaneous. Body densely covered

with fine, recumbent pubescence, partaking of ground color, except for the following albo-pubescent areas: head completely, pronotum with a thick line at base, broken at middle, scutellum completely, elytra with a pre-median rounded spot on disc of each, which in some specimens tends to extend obliquely toward humeri, a postmedian discal spot which varies from a rounded condition to a thick oblique one, meso- and metasternum and legs completely but less densely than on head, and basal margins of abdominal segments.

Antennae .9-1.1 mm. long, segment 2 shorter than 1, 2-3 equal in length, the former broader, 4-10 each two-thirds longer than 3, feebly serrate, 11 longer than 10 but narrower, sides and apex rounded. Terminal segment of maxillary palpi enlarged, with the form of a scalene triangle.

Pronotum broader than long (.76-1.25 x .6-.95 mm.), anterior margin and sides rounded, broadest before base, arcuate, midbasal lobe short, broad, subtruncate. Scutellum large, broadly triangular, sides and apex rounded.

Elytra but twice as long as broad (1.6-2.43 x .76-1.25 mm.), broadest near base, sides curved from the broadest point to apex, apices individually rounded. Anterior and intermediate tibiae equal to their tarsi in length, penultimate segments of the latter expanded, distal margins straight. Anal style robust, abruptly narrowed before middle, thence attenuate to apex, between 2.3 and 2.6 times length of apical ventral segment (.8-1.27 x .35-.48 mm.). Posterior tarsal claws with three teeth, two equal in size, one before, the other after the middle, the third one terminal.

Length: to apices of elytra, 2.2-3.38 mm.; to tip of anal style, 3-4.65 mm.

Ten specimens: Type, male, TULAGI Is., March 31, 1934, taken from low herbage on ridge (H. T. Padgen); a male paratype, type locality, November 25, 1934 (H. T. Padgen and R. A. Lever); three male and one female paratypes, GUADALCANAL LUNGA, February 27 and March 4, 1935 (R. A. Lever); one female paratype, MALAITA Is., August 16, 1934, "Su'u. banana leaf" (H. T. Padgen); one female paratype, VELLA LAVELLA Is., September 24, 1933, "Suantali-taro" (H. T. Padgen); one female paratype, ISABEL, January 28, 1936, "Gojururu" (R. A. Lever).

In Blair's key to the *Mordella* of the Fiji Islands (Ann. Mag. Nat. Hist. (9) 9, 1922, pp. 562-3) this species leads to *veitichi* Blair, but may easily be separated by the black anterior tibiae and tarsi, the reduction in the albo-pubescent areas on the pronotum and elytra, the longer third antennal segment, the shorter intermediate tarsi and the longer anal style.



EXPLANATION OF PLATE

Fig. 1, Dorsum of *Mordella lottini* Boisduval. Fig. 2, Dorsum of *Mordella salomonensis* Pic. Fig. 3, Dorsum of *Mordella subaenea* Ray. Fig. 4, Dorsum of *Mordellistena oceanica* Ray. Fig. 5, Maxillary palpus of *Mordella subaenea* Ray (male). Fig. 6, Maxillary palpus of *Mordella subaenea* Ray (female). Fig. 7, Maxillary palpus of *Mordellistena oceanica* Ray (male). Fig. 8, Maxillary palpus of *Mordellistena oceanica* Ray (female). Fig. 9, Antenna of *Mordella subaenea* Ray. Fig. 10, Antenna of *Mordellistena abrupta* Ray. Fig. 11, Posterior tibia and tarsus of *Mordellistena abrupta* Ray. Fig. 12, Posterior tibia and tarsus of *Mordellistena abrupta* Ray. Fig. 13, Maxillary palpus of *Mordellistena abrupta* Ray. Fig. 14, Maxillary palpus of *Mordellistena maxillaris* Ray (male). Fig. 15, Maxillary palpus of *Mordellistena maxillaris* Ray (female).

Mordellistena maxillaris Ray, new species

(Figs. 12, 14, 15)

Form elongate-ovate, narrow, sides slightly curved, derm rufo-castaneous, legs and antennae lighter, maxillary palpi flavous, ridges of posterior legs black. Body densely covered with fine, recumbent golden pubescence, somewhat coarser on the venter than elsewhere.

Antennae 1.9 mm. long, slender, filiform, reaching beyond base of abdomen, segments 1-3 short, 2 and 3 each successively shorter than the preceding, 4 as long as 2 and 3 together, 4-10 elongate, each somewhat broader at apex than at base, 11 distinctly longer than 10, broadest before apex, sides strongly curved. Three distal segments of maxillary palpi enlarged and flattened in both sexes, terminal segment subquadrate in male and smaller than the isosceles-triangular segment in female; second segment greatly enlarged and bell-shaped in male, of normal size in female; third segment large in both sexes, ovate in male, quadrangular in female.

Pronotum broader than long (1.13 x .94 mm.), anterior margin and sides rounded, broadest before base, base arcuate, midbasal lobe short, broad, subtruncate. Scutellum large, broad, triangular, base concave, sides slightly convex.

Elytra more than three and one-half times as long as broad (2.7 x .7 mm.), broadest near base, curved from a postmedian point to apex, apices individually rounded. Anterior and intermediate tibiae longer than their tarsi, penultimate segment of the latter broadened at apex, its apical margin excised. Posterior tibiae with four equal, oblique, parallel ridges (excluding sub-apical one); basitarsi with four, second and third segments each with two ridges. Anal style slender, slightly curved ventrad, attenuate to apex, but twice length of apical ventral segment (1.4 x .65 mm.). Posterior tarsal claws with six teeth, the basal one before middle, others successively larger distad.

Length: to apices of elytra, 3.64 mm.; to tip of anal style, 5.04 mm.

Nine specimens: Type, male, two male and two female paratypes, TULAGI Is., October 29, 1934, on *Hibiscus* flower (R. A. Lever); one male paratype, GUADALCANAL, March 4, 1935 (R. J. Lever); two female paratypes, GUADALCANAL LUNGA, March 4, 1935 (R. A. Lever); one female paratype, TULAGI, December 10, 1934, in home (H. T. Padgen).

This species is closely allied to the group that includes the Fijian *Mordellistena dodoneae* (Montoruzier) and *M. consimilis* Blair. It is similar in general appearance, but differs in its larger

size, the shorter second and third segments of the antennae and the additional oblique ridge of the posterior basitarsi. No mention is made of peculiarities of the maxillary palpi in the literature pertaining to these allied species and it is thus assumed that the palpi are of normal form. The writer has received word that, of the species sent for study, none can be identified with forms described by Blair and others in the collection of the British Museum and it is therefore assumed that additional, undescribed differences exist.

***Mordellistena abrupta* Ray, new species**

(Figs. 10, 11, 13)

Form elongate-ovate, narrow, slightly but distinctly curved. Derm fusco-castaneous, legs, antennae and mouth parts castaneous, ridges of posterior legs black. Body densely covered with fine, recumbent pubescence, partaking of ground color and distributed equally finely over entire surface.

Antennae 1.6 mm. long, slender, filiform, reaching distal abdominal segment, segments 2-3 short, together equal in length to 4, 4-10 equal in length, but becoming successively narrower distad, 11 distinctly longer than 10, broadest beyond middle, sides strongly curved. Three distal segments of maxillary palpi enlarged, flattened, terminal and penultimate segments subquadrate, the former much the larger of the two, antepenultimate segment almost as large as terminal one, subtriangular.

Pronotum distinctly broader than long (1.13 x .94 mm.), anterior margin and sides rounded, broadest before base, base arcuate, midbasal lobe short, broad, subtruncate. Scutellum large, broad, base concave, sides slightly convex.

Elytra narrow, more than three times as long as broad (2.2 x .7 mm.), broadest near base, curved from a postmedian point to apex, apices individually rounded. Anterior and intermediate tibiae longer than their tarsi, penultimate segment of the latter broadened at apex, its apical margin excised. Posterior tibiae with three, equal, oblique, parallel ridges (excluding subapical one); basitarsi with three, second and third segments each with two ridges. Anal style slender, slightly curved ventrad, attenuate to apex, almost three times length of apical ventral segment (.95 x .35 mm.); posterior tarsal claws with four teeth, the basal one postmedian, others successively large distad.

Length. to apices of elytra, 3.14 mm.; to tip of anal style, 4.09 mm.

One specimen: Type, male, GUADALCANAL LUNGA, March 4, 1935 (R. A. Lever).

This species is most closely allied to *maxillaris*, new species, described above, but may be separated by its darker color, smaller size, and differences in the ridges of the posterior legs, the peculiar maxillary palpi, and in the tarsal claws with a smaller number of teeth. From *consimilis* Blair it may be separated by its larger size, longer antennae and the shorter tibial ridges, in addition to the peculiar maxillary palpi. When the female of this species is found it seems probable that sexual differences in the shape of the maxillary palpi will be found to exist.

Mordellistena oceanica Ray, new species

(Figs. 4, 7, 8)

Form elongate, sides subparallel, derm generally black, with the following exceptions: front and clypeus castaneous, sides of pronotum broadly rufo-castaneous, connected by a narrow, subapical, transverse band (only in male!); legs flavocastaneous; tibiae and femora of hind pair darker. Body densely covered with fine, recumbent pubescence, generally partaking of ground color, except on venter, where it is whitish, and on pronotum and elytra, where it is condensed to form whitish bands, as follows. on pronotum, a thick, premedian line curved anteriorly to meet the anterior angles and extending along sides to base, a line along base with three short vittae extending into disc; scutellum entirely; elytra with a curved band surrounding humeri, a short, subbasal, subsutural line curving inward to meet scutellar area; a median area formed like an M, but broken at suture; a small, circular area lateral to the previous one; a postmedian, inverted, M-shaped area, reaching lateral margins, but broken at suture; and a short, transverse, apical area.

Antennae 1 mm. long, elongate, narrow, filiform, reaching mesosternum; 4 one-third longer than 3; 5-10 each as long as 3 and 4 together; 11 distinctly longer than 10, sides curved, one distinctly convex, the other almost straight, broadest premedially. Terminal segment of maxillary palpi enlarged, with the form of an isosceles triangle, distal margin transverse, straight.

Pronotum distinctly broader than long (.8-.65 mm.), anterior margin and sides rounded, base arcuate, midbasal lobe short, broad, rounded. Scutellum broad, rounded-triangular.

Elytra two and two-third times as long as broad (2.35 x .8 mm.), sides gently curved from base to postmedian point, thence strongly curved to apex, apices individually rounded. Anterior and intermediate tarsi longer than their tibiae. Posterior tibiae with three strong, equal, parallel ridges (excluding subapical one);

basitarsi with three, second and third segments with two ridges each. Anal style almost three times length of apical ventral segment (1.2 x .45 mm.), attenuate to apex, slightly curved ventrad.

Length: to apices of elytra, 3 mm.; to tip of anal style, 4.2 mm.

Five specimens: Type, male, a male paratype and two female paratypes, GUADALCANAL BERANDE, August 27, 1934 (H. T. Padgen); one female paratype, same locality, August 26, 1934, on wild fig (H. T. Padgen).

This species belongs to the same group as the previous two species, but may easily be separated by the difference in the relative lengths of the antennal segments, the striking pattern of pubescent markings on the pronotum and elytra and the smaller size.

PREY OF THE ROBBER FLY CALLINICUS CALCANEUS LOEW

(Diptera: Asilidae)

BY E. GORTON LINSLEY

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In May, 1942, near Oakhurst, Madera County, California, the writer had several opportunities to examine the insects captured by *Callinicus calcaneus* Loew. In this area the species was flying about over a hillside covered with mountain mizery, *Chamaebatia foliolosa* Benth., and was apparently preying almost entirely upon bees which were visiting the blossoms of this plant. Twenty-two specimens of the robber fly were captured with their prey. The prey consisted entirely of megachilid and andrenid bees as follows:

Species	Specimens
<i>Osmia brevis</i> Cresson	9
<i>Osmia cara</i> Cockerell	5
<i>Osmia densa pogonigera</i> Cockerell . .	1
<i>Osmia lignaria</i> Say	1
<i>Andrena auricoma</i> Smith	3
<i>Andrena angustitarsata</i> Viereck . .	1
<i>Andrena carliniformis</i> Cockerell . .	1
<i>Andrena saccata</i> Viereck	1

Although the above sample is probably too small to be interpreted as significant of the food preference of *Callinicus cal-caneus* Loew, it is interesting to note that the genus *Osmia* represented nearly three-fourths of the prey examined, *Andrena* only about one-fourth, although the seventeen species of *Andrena* present individually outnumbered the eight or nine species of *Osmia* by about five to one, as determined by analysis of 536 specimens captured by indiscriminate sweeping of the blossoms. It might be pointed out, however, that all of the *Osmia* captured are brilliant metallic green or blue, whereas the andrenids, with the exception of the golden *Andrena auricoma*, are dull, inconspicuous species.

It is well known (Banks, 1913; Bromley, 1914-36; and McAttee & Banks, 1920) that many of our North American robber flies prey primarily upon aculeate Hymenoptera, although most of the records involve the honey bee and other social bees (*Bombus*) and wasps (*Vespa*, etc.). Among the species which do appear to prey to some extent on solitary bees may be mentioned *Saropogon dispar* Coq. (Halictidae, Andrenidae), *Diogmites texanus* Bromley (Halictidae), *D. Symmachus* Loew (Anthophoridae, Andrenidae), *D. angustipennis* Loew (Halictidae), *D. umbrina* Loew (Andrenidae, Halictidae, Megachilidae), *Proctacanthus philadelphicus* Macq. (Anthophoridae, Andrenidae, Halictidae), *Promachus bastardi* Macq. (Halictidae), *P. fitchii* O. S. (Andrenidae, Megachilidae, Halictidae), and *P. rufipes* Wied. ("solitary bees").

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STENODYNERUS FUNDATUS AND RELATED SPECIES IN
NORTH AMERICA

(Hymenoptera, Vespidae)

BY RICHARD M. BOHART

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The various species of the *fundatus* group of *Stenodynerus* are among the commonest solitary wasps. Their range covers most of North America as far south as northern Mexico. They are all moderate in size, fairly slender, and possess the two pits on the front face of the pronotum which are characteristic of the genus *Stenodynerus*. They are more particularly distinguished by having no acarinarium under the short first abdominal tergite, by having a fine abundant silvery pubescence on the sides of the thorax and by the fact that the third abdominal tergite has a complete apical band.

Holotypes and allotypes of the new species and subspecies have been deposited in the California Academy of Sciences.

KEY TO THE STENODYNERUS FUNDATUS GROUP IN AMERICA
NORTH OF MEXICO

1. Posterior margin of pronotum not margined with yellow or whitish along its entire length; pits on front face of pronotum separated by less than a pit diameter.....2
Posterior margin of pronotum margined at least narrowly with yellow or whitish along its entire length; pits on front face of pronotum separated by more than a pit diameter....10
2. Second tergite unspotted; abdominal markings deep yellow; second and third tergites apically reflexed, particularly in male, reflex of second tergite 2 to 3 times as high as that of third; external surface of swollen apex of male hind tibia with a distinct ridge near the middle.....*foxensis*
Second tergite spotted; male hind tibia not as above.....3
3. Apical margin of third tergite hardly thicker medially than that of fourth 4
Apical margin of third tergite much thicker medially than that of fourth.....6
4. Reflexed margin of second tergite about as thick as an ocellus diameter; pronotal spots large and quadrate; markings whitish, legs mostly reddish; female clypeus with apex about as wide as length of fourth antennal segment; apical swelling of hind tibia in male with a broad pubescent horizontal sur-

- face; terminal antennal segment in male strongly curved in profile *taos*
 Reflexed margin of second tergite not as thick as an ocellus diameter; female clypeal apex about as wide as length of third antennal segment; apical swelling of male hind tibia slanting toward the inner leg surface; terminal antennal segment in male weakly curved in profile.....5
5. Second sternite very finely and sparsely punctured latero-basally; female with vertex pit usually indistinct, often hardly larger than surrounding punctures; female clypeus with coarse striatiform punctures and often mostly yellow; apex of hind tibia in male moderately and not abruptly swollen.....
 *claremontensis*
 Second sternite with moderately large, distinct, scattered punctures latero-basally; female vertex pit large and distinct; clypeus usually with fairly fine punctures and mostly or entirely black in female; body markings often reddish; apex of male hind tibia usually abruptly swollen..... *microstictus*
6. Reflexed margin of second and third tergites thickened about equally; antennal flagellum partly fulvous; markings whitish; apex of male hind tibia swollen; female vertex pit larger than an ocellus.....7
 Reflexed margin of second tergite two or more times as thick as third; female vertex pit smaller than an ocellus and relatively indistinct 8
7. Dorsum of thorax nearly impunctate..... *xantianus*
 Dorsum of thorax well punctured..... *phoenixensis*
8. Antennal flagellum partly fulvous; markings usually yellow; male hind tibia distinctly swollen apically..... *anatropus*
 Antennal flagellum entirely dark; male hind tibia not swollen apically 9
9. Markings whitish *papagorum papagorum*
 Markings yellowish *papagorum tinctifer*
10. Second tergite without free spots, markings mainly yellow; hind margin of second tergite 2 or more times as thick as an ocellus diameter; male middle femur with a distinct tooth at the end of a ridge; last antennal segment in male slightly bent in profile *ochrogonius*
 Without above combination of characters.....11
11. Transverse carina of first sternite angled medially; male middle femur with a tooth or sharp angle at the end of a ridge; last antennal segment in male distinctly bent in profile.....
 *fundatus*
 Transverse carina of first sternite forming a rounded or truncate projection medially; male middle femur angled medially but without a definite tooth; male last antennal segment curved in profile.....12

12. With extensive reddish markings..*fundatiformis fundatiformis*
With reddish markings restricted mainly to legs.....
.....*fundatiformis gonosceles*

STENODYNERUS PAPAGORUM (VIERECK)

Odynerus papagorum Viereck, 1908. Trans. Amer. Ent. Soc. 33: 394 (holotype, U. K.).

Distribution: Arizona (type locale), New Mexico, Colorado.

Stenodynerus papagorum tinctifer Bohart, new subspecies

Similar to typical *papagorum* except that markings are distinctly deep yellow instead of whitish yellow. Also, the second and third tergites are somewhat less strongly reflexed.

Holotype male, *allotype* female, 10 male paratypes, and 6 female paratypes, BEAR VALLEY, SANTA CRUZ COUNTY, CALIFORNIA, July, 1913 (F. C. Clark). Other specimens apparently referable to this subspecies are from SALT LAKE CITY, UTAH; LOGAN, UTAH, and JENNY LAKE, WYOMING.

Stenodynerus anatropus Bohart, new species

Male. Black, marked with yellow as follows: Mandible mostly, clypeus, first antennal segment in front, interantennal spot, orbital line, postocular spot, two spots on pronotum anteriorly, tegula mostly, spot beneath, mesonotal spot, postscutellum mostly, propodeum laterally, legs mostly, apical margin of first six tergites and second to fifth sternites, lateral spots on first and second tergites and second sternite. Inner surface of flagellum pale fulvous, hook black. Mandible apically, legs partly, tegula medially, wing veins basally, reddish. Pubescence very fine, relatively inconspicuous, silvery. Puncturation moderate, sparse on clypeus, very coarse toward apex of second tergite. Last antennal segment slender; clypeus sharply and angularly incised apically; middle femur with a prominent tooth, middle and hind femora apically swollen. Second and third tergites reflexed apically, reflexed portion of second about three times as high as that of third. Length to apex of second tergite, 7 mm.

Female. Markings as in male except that mandible is mostly blackish to red, clypeus has a dark margin and central spot, and tibiae are reddish. Clypeus well punctured and obtusely incised apically, the apical breadth about as great as length of third antennal segment. Reflexion of second and third tergites weaker than in male. Length of apex of second tergite 8.5 mm.

Holotype male, *allotype* female, and 4 male paratypes, DAVIS CREEK, MODOC COUNTY, CALIFORNIA, July, 1922 (C. L. Fox). Other paratypes (all from California), 2 males and 1 female, BUCK CREEK, MODOC COUNTY (C. L. Fox); 2 pair, SEQUOIA NATIONAL PARK; 4 males and 1 female, SUNSET VALLEY, SANTA BARBARA COUNTY (M. Cazier); 2 males and 1 female, ALTADENA (C. D. Michener); 6 males and 1 female, LA CRESCENTA (C. D. Michener and R. M. Bohart); 3 males and 6 females, SAN JACINTO MOUNTAINS, May and June.

S. anatrofus occurs commonly in California in the foothills along the coast from Trinity County to Los Angeles County including Santa Cruz Island and Mt. Diablo, along the foothills of the Sierras, and in most of the southern California mountain ranges from 2,000 to 5,000 feet elevation. I have also seen specimens from Oregon, Washington, and Nevada.

Paratypes in collections of U. S. National Museum, American Museum of Natural History, Oregon State College, California Academy of Sciences, and J. Bequaert.

STENODYNERUS CLAREMONTENSIS (CAMERON)

Odynerus claremontensis Cameron, 1905. *Invertebrata Pacifica* 1:122.

Distribution: Common throughout California (type locality, mountains near Claremont). I have also seen specimens from Nevada and Oregon.

STENODYNERUS MICROSTICTUS (VIERECK)

Odynerus microstictus Viereck, 1906. *Trans. Amer. Ent. Soc.* 32: 199 (holotype U. K.).

Odynerus gulielmi Viereck, 1908. *Trans. Amer. Ent. Soc.* 33:408.

Distribution: Kansas (type locality, Clark County), Texas, Colorado, Nevada, Arizona, California (mostly in the southern deserts), northern Mexico, Lower California.

STENODYNERUS PHOENIXENSIS (CAMERON)

Ancistrocerus (Nortonia?) phoenixensis Cameron, 1908. *Trans. Amer. Ent. Soc.* 34:225.

Distribution: Arizona (type locality, Phoenix), Colorado, Utah, Nevada.

STENODYNERUS TAOS (CRESSON)

Odynerus toas Cresson, 1868. Trans. Amer. Ent. Soc. 1:381 (err. typ.) (holotype, A.N.S.P.).

Odynerus taos Cresson, 1872. Trans. Amer. Ent. Soc. 4:243.

Odynerus cressoni Cameron, 1908. Trans. Amer. Ent. Soc. 34:198.

Distribution: New Mexico (type locality), Texas, South Dakota, Nebraska, Colorado, Arizona, Wyoming.

Stenodynerus foxensis Bohart, new species

Male. Black, clypeus, first antennal segment in front, inter-antennal spot, mandible partly, orbital line, postocular spot, tegula anteriorly, hind mesonotal angle, whitish yellow; front margin of pronotum, legs partly, line across postscutellum, apical margin of tergites 1 to 6 and sternites 2 to 6 (bands on 4-6 broken), yellow; inner margin of flagellum, legs partly, wing veins basally, reddish; wings lightly brown stained. Pubescence minute, dense, silvery. Puncturation moderate, sparse on clypeus, coarse on second tergite subapically and on third sternite. Breadth of clypeus at apex as great as $\frac{3}{5}$ the length of antennal segment 3; last antennal segment large, stout, fitting into a groove in segment 10; interocellar area slightly swollen; middle femur with a distinct tooth; middle and hind tibiae apically swollen, that of hind tibia with a sharp external tooth-like ridge. Apical margins of second and third tergites reflexed, that of second about 3 times as high as that of third. Length to apex of second tergite 7.5 mm.

Female. Markings, pubescence, and puncturation about as in male except as follows: Flagellum black, clypeus black save for a basal spot, apical bands on sternites 4 to 6 complete, clypeus moderately punctured. Depression of vertex about as large as an ocellus. Apical breadth of clypeus about $\frac{3}{5}$ as great as length of third antennal segment. Length to apex of second tergite 8 mm.

Holotype male, *allotype* female, 10 male paratypes, and 1 female paratype, BABOQUIVARI MOUNTAINS, ARIZONA, July to August, 1924 (collection of C. L. Fox, O. C. Poling, collector); 1 male paratype, 14 miles east of ORACLE, ARIZONA, July 27, 1924 (E. P. Van Duzee); 1 male paratype, LOWELL RANGER STATION, PIMA COUNTY, ARIZONA, July 20, 1916; 1 male paratype, PATAGONIA, ARIZONA, August 8, 1940 (W. L. Swisher); 1 female paratype, WILLOW CREEK MOUNTAINS, NEW MEXICO, July, 1933. Paratypes in collections of U. S. National Museum, California Academy of Sciences, and J. Bequaert.

STENODYNERUS XANTIANUS (SAUSSURE)

Odynerus xantianus Saussure, 1870. Rev. Mag. Zool. 22:103.

Odynerus xanthianus Saussure, 1875. Smithsn. Misc. Publ. 254: 324.

Distribution: Common in many parts of Lower California (type locality, Cape St. Lucas), also occurring uncommonly in the southern deserts of California.

STENODYNERUS FUNDATIFORMIS (ROBERTSON)

Odynerus fundatiformis Robertson, 1901. Trans. Amer. Ent. Soc. 27:200.

Distribution: Florida (type locality, Inverness) Georgia, South Carolina, Mississippi, Arkansas, Texas.

Stenodynerus fundatiformis gonosceles Bohart, new subspecies

Black, marked with whitish yellow. Reddish markings restricted mainly to legs. Clypeus well punctured; interantennal tubercles present; posterior margin of pronotum yellowish; male last antennal segment small and slender; male middle femur angled but hardly toothed medially; male hind tibia scarcely swollen; apical margins of tergites 2 and 3 reflexed, that of two about as high as an ocellus diameter, that of three less than half so high. Wings brown stained, violaceous.

Holotype male, *allotype*, female, and 1 female paratype, BABYLON, LONG ISLAND, NEW YORK, June, 1936 (F. Blanton). Other paratypes, MINNESOTA: 1 male, St. Anthony Peak (H. H. Knight); 1 male, Pine City (H. S. Telford). NEW JERSEY: 1 male, Milltown; 1 pair, Lakehurst; 2 females, Browns Mills. VIRGINIA: 1 male, Petersburg; 1 female, Cape Henry (L. Lacey). NORTH CAROLINA: 1 male, Bryson City (J. C. Crawford); 3 females, Black Mountains (W. Beutenmuller); 2 females, Southern Pines. MISSOURI: 1 female, Brandon (E. C. Van Dyke); 1 female, Ozark Lake (E. C. Van Dyke). ALABAMA: 1 female, Tuskegee (R. H. Beamer). ARKANSAS: 1 female, Eureka Springs (E. C. Van Dyke). FLORIDA: 1 female, De Funiak Springs.

Paratypes in collections of U. S. National Museum, University of Kansas, California Academy of Sciences, and J. Bequaert.

Stenodynerus ochrogonius Bohart, new species

Male. Black, marked with whitish yellow as follows: mandible basally, clypeus, scape in front, interantennal spot, orbital line,

postocular spot, front margin of pronotum broadly and hind margin narrowly, tegula partly, spot beneath, postero-lateral angle of mesonotum, line across postscutellum, legs partly, apical margins of tergites 2 to 6 and sternites 2 to 4. Mandible apically, inner surface of flagellum faintly, tegula and legs partly, wing veins basally reddish. Wing membrane nearly transparent. Puncturation moderate to coarse, moderate on clypeus, coarse toward apical margins of abdominal segments 2 and 3. Pubescence fine and silvery. Clypeus sharply two-pointed, moderately incised apically, apical breadth about half the length of the third antennal segment. Last antennal segment broad, flattened, somewhat bent in profile. Weak interocular swellings present. Middle femur with a strong tooth, hind tibia abruptly swollen apically. Second and third tergites reflexed apically, reflex of second almost 3 times that of third. Length to apex of second tergite 8.5 mm.

Female. About as in male with following exceptions: Clypeus black save for a pale basal crescent, orbits with a spot only, flagellum black, propodeum with a lateral yellow spot. Vertex pit considerably larger than an ocellus. Apical breadth of clypeus about as great as length of third antennal segment. Length to apex of second tergite 9 mm.

Holotype male, *allotype* female, 31 male paratypes, and 17 female paratypes, BABOQUIVARI MOUNTAINS, ARIZONA, June to October, 1924 (C. L. Fox collection, O. C. Poling, collector). Other paratypes, 7 males and 11 females, SANTA RITA MOUNTAINS, ARIZONA (F. H. Snow, B. E. White); 5 males and 1 female, OAK CREEK CANYON, ARIZONA (G. E. and R. M. Bohart). I have also seen specimens from PATAGONIA, SONORITA, ORACLE, CHIRICAHUA MOUNTAINS, SANTA CATALINA MOUNTAINS, and HUACHUCA MOUNTAINS, ARIZONA; WILLOW CREEK MOUNTAINS, NEW MEXICO; and BROWNSVILLE, TEXAS.

S. ochrogonius is closely related to *S. huasteca* Saussure from Mexico. The former is a more robust species, however, with the second and third tergites more reflexed and the male last antennal segment larger and less distinctly bent.

STENODYNERUS FUNDATUS (CRESSON)

Odynerus fundatus Cresson, 1872. Trans. Amer. Ent. Soc. 4:242 (holotype, A.N.S.P.).

Distribution: Texas (type locality), Oklahoma, Missouri, Alabama.

A NEW SPECIES OF CICINDELA AND TWO NEW RECORDS OF COLEOPTERA

BY BERNARD ROTGER

San Luis, Colorado

Cicindela theatina Rotger, new species

Head and thorax shining green tinged frequently with coppery lustre, anterior and basal impressions of thorax purplish. Elytra dark reddish cupreous, opaque; at times greenish toward the base, with basal reflection purplish or green. Legs and underside of body metallic green. Labrum short, white, and more than three times wider than long, with a small tooth. Head hairy between the eyes, with many interocular striae; palpi pale, with last joint green. Prothorax sparsely covered with long white hairs, subquadrate, scarcely wider than long and convex. Elytra granulate-punctate, punctures rather distant generally, and green, but more closely spaced toward base; interspaces reddish cupreous; elytral markings consist of humeral lunule almost reaching, and in several instances actually reaching middle band and merging into it, middle band obliquely bent with long extremity not hooked at tip, but sometimes dilated, and apical lunule; all markings widely united at margin. Palpi, four front trochanters, femora, sides of abdomen as well as of thorax very hairy. Elytra more parallel in male, wider and subparallel in female, apex being finely serrulate. Tarsal claws long. Length, including labrum, 12-14.50 mm.

Holotype male, *allotype* female, and *topoparatypes* in the Rotger collection.

I believe that this species might be placed between *Cicindela lengi* and *C. limbata* Say.

This species inhabits the edge of the Great Sand Dunes in the SAN LUIS VALLEY, COLORADO, at an altitude of about 8,200 feet, where it was found by the author in three field trips, on the 26th of June, the 28th of August, 1942, and on the 19th of May, 1943. It was discovered on the side of Mosca Pass where the road approaches the Sand Dunes, in spots of scanty vegetation and where the shifting sands begin. It was not found farther in the sand where there was no vegetation. The beetle runs rapidly upon the sand and it emits an orange liquid from its mouth. This tiger-beetle emerges in August, when the most perfect specimens can be obtained, and probably hibernates in the sand until spring. By the reason of frequent sand storms to which this species is subjected, the specimens caught in June lack most of

the hair on the front and on the upper side of the thorax. During the month of August a few specimens were taken belonging to the preceding generation, and are of a dull green bronze.

On July 5, 1937, Mr. R. P. Allen discovered at Tuba City, Arizona, *Cicindela nevadica tubensis* Cazier. Two years after, on August 8, I found four specimens of the same subspecies, at Farmington, New Mexico; the following year on July 13, at Canon Largo about eight miles from Blanco, New Mexico, I

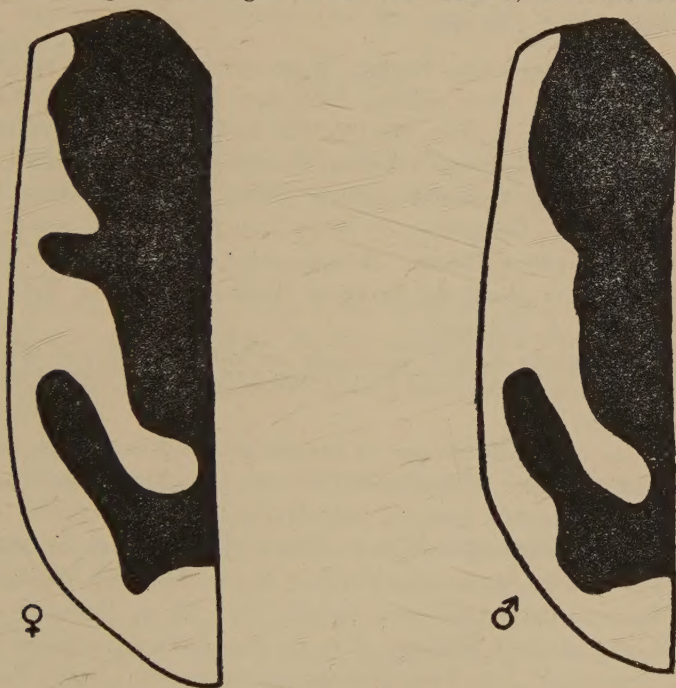


Fig. 1. Elytral pattern of *Cicindela theatina* Rotger.

caught eleven specimens of the same. Mr. Mont A. Cazier who identified this form informed me that it had never before been taken in New Mexico.

Looking after butterflies, I was forced by the cloudy day to pay more attention to Coleoptera, and luckily so, for I found among small ants a few specimens of *Fustiger knausi* Schfr. This is the first time that the *Clavigeridae* family has been collected in Colorado. The species was found as I was descending from Mesa Reservoir, near Durango, on April 30, 1941. Mr. Alan S. Nicolay made the identification.

HOST PLANT RECORDS OF WESTERN LYGUS

(Hemiptera, Miridae)

BY ROBERT L. USINGER

University of California, Davis

The *pratensis* group of the genus *Lygus* is rich in both specimens and species in western North America. For several years I have kept careful host records in an attempt to define the limits of variation within species in this difficult group. The following records appear to be new:

1. *Lygus distinguendus* Reuter. Three specimens of this species were beaten from willow, *Salix* sp., Malahat Drive, Vancouver Id., B. C., June 26, 1940 (R. L. Usinger). The variety *tahoensis* Knight was taken on the same host on the trail to Glen Aulen, Yosemite National Park, California, July 27, 1939 (R. L. Usinger).
2. *Lygus bradleyi* Knight. A long series was collected on Yellow lupine along the beach at Arcata, California, July 8, 1940 (R. L. Usinger).
3. *Lygus stratus* Knight. Common on lupine at Miguel Meadows, Yosemite National Park, California, July 11, 1941 (R. L. Usinger).
4. *Lygus perplexus* Stanger. Common on forest anemone, *Anemone* sp., near timberline (5500 ft.), Paradise, Mount Rainier, Washington, June 22, 1940 (R. L. Usinger).
5. *Lygus convexicollis* Reuter. This and the variety *coloratus* Knight were common on *Madia* at Miguel Meadows, Yosemite National Park, California, July 7, 1941 (R. L. Usinger).
6. *Lygus usingeri* Stanger. The type series was collected on cream bush, *Holodiscus discolor*, on the trail to Nevada Falls, August 14, 1938 (R. L. Usinger). No specimens have been found earlier in the season. This and the following species belong to the *nubilus-nubilatus* group. *Nubilus* Van Duzee, as noted by Van Duzee, occurs on elderberry, *Sambucus*. I have found it common on *Sambucus* in the Oakland Hills and in the San Jacinto Mountains.
7. *Lygus nubilatus* Knight? Specimens which I have tentatively placed here were collected sparingly on *Spiraea douglasii* in the Blue Mountains, Oregon, July 4, 1940 (R. L. Usinger) and along the Malahat Drive, Vancouver Id., B. C., June 26, 1940 (R. L. Usinger).

SOME RECORDS OF MYRIOPODS COLLECTED BY
W. M. PEARCE IN CALIFORNIA

BY RALPH V. CHAMBERLIN
University of Utah, Salt Lake City

Following is a list of the species represented in a collection of centipeds and millipeds made by Mr. W. M. Pearce from June to August, 1941, in Mono, Inyo, Siskiyou and Shasta counties, California.

CHILOPODA

Otocryptops sexspinosus (Say).

Mono County: Monmouth Lakes, August 18, 1941.

Shasta County: Dickson's Flat, July 21, 1941.

A species common throughout the state.

Tomotaenia laevipes (Wood).

Shasta County; Dickson's Flat, July 31, 1941.

This large geophiloid, in life conspicuous because of its bright red color, is also a form widespread in California and Oregon.

Ethopolys pusio (Stuxberg).

Mono County: Monmouth Lakes, June 25 and August 18.

Siskiyou County: July 21.

A species previously known only from the region about San Francisco Bay.

Gosibius benespinosus Chamberlin.

Inyo County: Bishop Creek, South Fork, August 17, at elevation, 10,000-11,000 feet.

Mono County: Montgomery Canyon, July 13.

Described originally from Bishop and Benton Creek, the only previous records.

Pokabius pitophilus (Chamberlin).

Inyo County: Bishop Creek, South Fork, August 17.

Mono County: Convict Creek, June 20.

A species common in the Sierras about Truckee, from where it was originally described.

Lophobius castelloses (Chamberlin).

Siskiyou County: Bartle, July 21.

Originally described from Mt. Shasta, the only record previously published.

DIPLOPODA

Californiulus vicinus Chamberlin.

Shasta County: Dickson's Flat, July 21.

Five specimens, representing both sexes. These are the types of the species.

Caliulus pearcei Chamberlin.

Inyo County: Bishop Creek, South Lake, August 17. Elevation, 10,000 to 11,000 feet.

Nineteen specimens constituting the types of the species.

Caliulus furcifer (Harger)

Siskiyou County: Six miles south of McCloud, July 21.

This species is rather common over much of California and Oregon.

A NOTE ON THE HIBERNATION OF MISCHOCYTTARUS FLAVITARSUS IN A NEST OF DOLICHOVESPULA ARENARIA.

On about February 1, 1944, a nest of *Dolichovespula arenaria* (Fab.) was brought into the Division of Entomology and Parasitology, University of California at Berkeley. The nest contained no live *D. arenaria*. This was to be expected at that time of year since the colonies commonly die out from midsummer to early fall and the nests are deserted through the winter. Oddly enough, however, the comb contained a large amount of brood including many individuals which had transformed to the adult stage but had died before emerging. The cause of their death was uncertain. They did not appear to have died of any disease. They may have been killed by cold, or more likely, they were unable to emerge due to lack of nourishment in the late larval stages when the colony was declining. Another very interesting feature of this nest was the fact that it contained nearly a hundred adults of *Mischocyttarus flavitarsus* (Sauss.). This unusual number of *M. flavitarsus* no doubt represented females hibernating in the abandoned nest. However, it is not uncommon to find small groups of the overwintering females collected in protected places.—RAY F. SMITH.